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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/009,818	12/13/2001	Takahisa Doba	ICC-196-PCT-US	6263

7590 05/22/2003

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EXAMINER

SELLERS, ROBERT E

ART UNIT	PAPER NUMBER
1712	6

DATE MAILED: 05/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/009,818	DOBA, TAKAHISA
	Examiner Robert Sellers	Art Unit 1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 13 December 2001.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 31-80 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) \_\_\_\_\_ is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) 31-80 are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____	6) <input type="checkbox"/> Other: _____

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claims 31, 34, 38, 41-50 and 52-54, drawn to an ester with terminal heterocyclic oxygen or sulfur rings, and a curing agent.

Group II, claims 32, 39, 40, 60 and 65-76, drawn to an epoxy resin, an oxyalkylene epoxy resin; optionally, a coreactant diluent, and a curing agent.

Group III, claims 33 and 51, drawn to an ester with terminal heterocyclic oxygen or sulfur rings, a curing agent and an anhydride.

Group IV, claims 35-37, drawn to an ester with terminal heterocyclic oxygen or sulfur rings, a curing agent and an oxyalkylene and aromatic ring containing polymer with terminal heterocyclic oxygen or sulfur rings.

Group V, claims 55 and 56, drawn to an electronic device containing an underfill sealant containing an ester with terminal heterocyclic oxygen or sulfur rings, and a curing agent; and a method of underfill sealing therewith.

Group VI, claim 57, drawn to a method of reworking a reaction product of a composition comprising an ester with terminal heterocyclic oxygen or sulfur rings, and a curing agent.

Group VII, claim 58, drawn to a method of reworking a reaction product of a composition comprising an ester with terminal heterocyclic oxygen or sulfur rings, and a curing agent further comprising the steps of removing a semiconductor chip from a circuit board and, optionally, cleaning the circuit board surface.

Group VIII, claim 59, drawn to an epoxy resin, an oxyalkylene epoxy resin; optionally, a coreactant diluent, a curing agent and an anhydride.

Group IX, claims 61-63, drawn to an epoxy resin, an oxyalkylene epoxy resin; optionally, a coreactant diluent, a curing agent and an oxyalkylene and aromatic ring containing polymer with terminal heterocyclic oxygen or sulfur rings.

Group X, claim 64, drawn to an epoxy resin, an oxyalkylene epoxy resin; optionally, a coreactant diluent, a curing agent and an ester with terminal heterocyclic oxygen or sulfur rings.

Group XI, claims 77 and 78, drawn to an electronic device containing an underfill sealant containing an epoxy resin, an oxyalkylene epoxy resin; optionally, a coreactant diluent, and a curing agent; and a method of underfill sealing therewith.

Group XII, claim 79, drawn to a method of reworking a reaction product of a composition comprising an epoxy resin, an oxyalkylene epoxy resin; optionally, a coreactant diluent, and a curing agent.

Group XIII, claim 80, drawn to a method of reworking a reaction product of a composition comprising an epoxy resin, an oxyalkylene epoxy resin; optionally, a coreactant diluent, and a curing agent further comprising the steps of removing a semiconductor chip from a circuit board and, optionally, cleaning the circuit board surface.

The inventions listed as Groups I-XIII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features. The special technical feature is the curable resin containing at least two heteroatom-containing carbocyclic structures pendant from a core structure having a linkage capable of being reworked, or an epoxy resin containing at least one alkylene oxide residue adjacent to at least one terminal epoxy group (specification, page 6, lines 13-20).

The Journal of Macromolecular Science article by Crivello et al. shows a resin possessing heteroatom-containing carbocyclic structures conforming to the structure of claim 31 wherein  $X^2$  and  $X^1$  are oxygen,  $m'$  and  $m$  are 2, and  $X^b$  and  $X^a$  are not present. Japanese Patent No. 5-271389, 2-18412, 62-295029, 11-17074, 58-42290, 63-159426 and 6-136092 depict epoxy resins with alkylene oxide residues adjacent to two terminal epoxy or oxetane groups (JP 11-17074) within the ambit of the curable resin of claim 32. Accordingly, the special technical feature does not make a contribution over the aforementioned prior art, thereby validating a holding of lack of unity.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

- 1) The structures of claim 31 wherein  $X^2$ ,  $X^1$ ,  $m'$ ,  $m$ , the presence or absence of  $X^b$  and  $X^a$ ,  $a$  the structure of  $X^b$  and  $X^a$  when present are identified.
- 2) The epoxy resins of claim 32 comprising the structures depicted on pages 3-4 of the preliminary amendment filed December 13, 2001 (Paper No. 1), or the combination of an epoxy resin and a coreactant diluent having the structure of claim 32 wherein  $X$ ,  $Y$  and  $R$  are identified.
- 3) The curing agents of claims 43-50 wherein one single species is elected therefrom. For example, NOVACURE HX-3722 which is an imidazole/bisphenol epoxy adduct dispersed in bisphenol A epoxy resin employed in Tables 1a-1f on pages 31-33 of the specification and described on page 19, lines 17-20 could be elected.
- 4) The oxyalkylene and aromatic ring containing polymer with terminal heterocyclic oxygen or sulfur rings with the structure of claim 35 wherein  $X^2$ ,  $X^1$ ,  $m'$ ,  $m$ ,  $X^b$ ,  $X^a$ ,  $o'$ ,  $o$  and the box are identified.

A single species within each of items 1) to 4) is required aligned with the elected Group from the lack of unity advanced hereinabove. For instance, the election of Group I necessitates the election of a single species from items 1) and 2).

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable.

The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Claims 1-80 are generic

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the same reasons espoused with respect to the lack of unity of invention set forth hereinabove.

The reply to this requirement to be complete must include an election of the invention and species to be examined even though the requirement be traversed (37 CFR 1.143).

Note that claim 48 improperly defines the modified aliphatic amine by a trademark. The specification on page 19, line 23 to page 20, line 6 does not provide a clear denotation of the reactants employed in the formation of the particular modified aliphatic amine.

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5/21/03



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